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ABSTRACT

The purpose of this study was two-fold: first, to determine whether children under direct patterns of teacher verbal behavior significantly differed from those under indirect patterns on internal-external (IE) locus of control; and second, to determine which of the specific teacher verbal behaviors (comprising the direct and indirect patterns) were the least and most important predictors of IE. A longitudinal sample of third-graders (N=32[illegible]) was used. The first problem was investigated using analyses of covariance; the second using multiple regression. Statistical tests of the hypotheses failed to reach significance. Factors which may have accounted for the findings were discussed, along with the developmental trends in IE observed in this investigation. (MS)

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EFFECTS OF DIRECT VS. INDIRECT TEACHER VERBAL BEHAVIORS ON THIRD-GRADE CHILDREN'S IE LOCUS OF CONTROL

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Abstract

The purpose of this study was two-fold: First, to determine whether children under direct patterns of teacher verbal behavior significantly differed from those under indirect patterns on internal-external (IE) locus of control; and second, to determine which of the specific teacher verbal behaviors (comprising the direct and indirect patterns) were the least and most important predictors of IE. A longitudinal sample of third-graders (N=321) was used. The first problem was investigated using analyses of covariance; the second using multiple regression. Statistical tests of the hypotheses failed to reach significance. Factors which may have accounted for the findings were deiscussed, along with the developmental trends in IE observed in this investigation.

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PROBLEM

Rotter (1954, 1966) developed from social learning theory a concept of internal-external (IE) control of reinforcement which describes the extent to which individuals differ in their belief that they are able to influence or control the outcomes of their behavior. Individuals who believe that reinforcements are contingent upon their own behaviors, capacities, or attributes are referred to as "internals," while those who attribute reinforcements to forces beyond their personal control (such as luck, fate, chance, significant or powerful others, etc.) are referred to as "externals."

Studies conducted within the laboratory setting using IE as a variable have demonstrated that internals are superior to externals on such variables as speed, generalization, and retention of learning (Lefcourt, 1966). A host of other studies (reviewed by Joe, 1971; Lefcourt, 1966, 1972; MacDonald, 1973; Minton, 1967; Rotter, 1966) have thoroughly documented the importance of IE to the child's development and maintenance of intellectual, emotional, physical, and social competencies.

Investigations of accumulative antecedents of IE have focused mainly upon parental child-rearing practices. Summarized briefly, the findings (Chance, 1965; Cromwell, 1963; Davis and Phares, 1969; Epstein and Komorita, 1971; Katkovsky, et al., 1967; MacDonald, 1971) have consistently indicated that internal and external orientations are developed in different home environments. Internals more often come from homes in which parents en-

courage independence and provide warm, positive climates, while externals are more frequently the product of parental behaviors that foster dependency and hostility.

Without doubt, parental child-rearing practices contribute much to children's development of IE. However, it is reasonable to expect that other environmental influences such as those found in schools would also play a significant role. Research conducted by Flanders (Amidon and Flanders, 1967; Amidon and Hough, 1967) on student attitude and achievement variables has demonstrated that a sustained pattern of direct teacher verbal behaviors (lecturing, giving directions, criticizing or justifying authority) tends to restrict children's freedom to interact in the classroom, thereby creating conditions similar to parenting styles that lead to the development of externality. In contrast, a continued pattern of indirect teacher verbal behaviors (accepting feelings, praising or encouraging, accepting or using student ideas, asking questions) expands children's freedom to interact, thus creating conditions of autonomy similar to parental behaviors which foster the development of internality.

Inasmuch as teachers, like parents, can create conditions of dependence or independence through their use of direct or indirect verbal control techniques, one could hypothesize that children under such circumstances would develop external or internal control orientations, respectively. The purpose of this study was therefore to determine:

1. Whether third-grade children in classes under direct patterns of teacher verbal behavior significantly differed in IE from those in classes under indirect patterns of teacher verbal behavior.

2. Whether the IE scores of male and female children were differentially affected by the direct and indirect patterns of teacher verbal behavior.
3. The relative contribution of each of the seven specific teacher verbal behaviors (comprising the direct and indirect patterns) to the variation in children's IE scores.

PROCEDURES

Sample

Grade 3 was selected as the sample for this investigation, since past studies based on cross-sectional data for grades 3-12 have indicated the greatest gain in IE occurring between grades 3 and 4 (Crandall, et al., 1965). The longitudinal investigation extended for a nine-month period from September - May. A total of 30 third-grade self-contained classrooms were randomly selected from a population consisting of 40 third-grade classrooms in a public school system located in a suburban community of Massachusetts. A 50 percent sample of pupils stratified on sex was then randomly selected from each classroom. At the end of grade 3, the total sample included 172 males and 149 females.

Instruments

The IE measure used in this study was the Intellectual Achievement Responsibility (IAR) questionnaire. This measure yields two separate subscores, one for belief in internal responsibility for successes (I+), the other for internal responsibility for failures (I-). The total internal (I) scale is arrived at by summing all items over the I+ and I-

subscales. Unlike many of the more general measures of IE in current use, the IAR was designed to assess children's IE exclusively in intellectual-academic achievement tasks and situations. In his review of measures of IE, MacDonald (1973) commented that the IAR has been carefully developed, has an abundant literature of studies in which it has been used, and has quite acceptable psychometric properties.

Teacher verbal behaviors were measured in this study using Flanders' System of Interaction Analysis (FSIA). FSIA is a systematic procedure by which a trained observer records and categorizes teacher-student verbal interactions as they occur in the classroom. The validity and reliability of FSIA has been well established over the past decade through its use in a wide variety of studies on the social-emotional climate of the classroom (Amidon and Flanders, 1967: Amidon and Hough, 1967; Medley and Mitzel, 1963).

Data Collection

The IAR was individually administered to each child in the 50 percent probability sample by specially trained outside examiners in September, 1974, and readministered in May, 1975. Questions on the IAR were recorded on audio tape so that each child was presented with verbal stimuli which had the same inflections, tone, and rate. Means and standard deviations for the IAR posttest scores (adjusted for initial differences on the pre-test) are given in Table 1. K-R 20 reliabilities for I, I+ and I- scores ranged from .55 - .71. These reliabilities closely approximated the split-half reliabilities reported by Crandall, et al., (1965).

During the nine-month interval between IAR pre- and posttesting, teacher verbal behaviors were randomly observed by an assistant trained in the use of FSIA. Each of the 30 teachers was observed once per month during

the investigation, with total observation times ranging from 80-100 minutes per teacher. At intervals of every 50 classroom visits, inter- and intra-observer reliabilities were computed using Scott's coeffient (Ober, et al., 1971). Mean Scott coefficients for the FSIA observer were .87 and .90 for inter- and intra-observer reliabilities, respectively.

After IAR posttesting, FSIA data for each teacher were converted into Indirect-Direct (I/D) ratios using external norms (Flanders, 1970). Teachers with mean I/D ratios of .5 or above were classified as indirect, while those below .5 were categorized as direct in their verbal behavior patterns. Using these criteria, 18 teachers were categorized as indirect and 12 as direct.

RESULTS

In order to determine whether children in classes under direct teacher verbal influence significantly differed from those under indirect teacher verbal influence on IE scores, as well as the differential effects, six separate analyses of covariance were computed. As indicated in Table 1, children under indirect teacher verbal influence were slightly higher on adjusted mean I, I+ and I- scores. However, when subjected to covariance analysis, each of the obtained F ratios failed to reach statistical significance at the .05 level (see Table 2), thus indicating no significant relationship between children's IE and teacher verbal behavior patterns.

Standard multiple regression equations were computed in order to test whether the seven specific teacher verbal behaviors (accepting feelings, praising or encouraging, accepting or using student ideas, asking questions, lecturing, criticizing or justifying authority, giving directions) inter-

acting together were significant predictors of children's adjusted mean I, I+, and I- posttest scores. As indicated by Table 3, each of the regression equations failed to yield statistically significant F ratios, thereby obviating the need for further statistical analyses which were to have determined those teacher verbal behaviors that were the least and most important predictors of IE.

Aside from testing the statistical hypotheses of this study, additional analyses of the longitudinal data were conducted. Previous cross-sectional data (Crandall, et al., 1965) suggested that there was no gain in the I+ subscale but approximately a 1.5 point average gain in the I- sub-scale for both sexes between grades 3 and 4. The longitudinal data in this study showed an average gain of approximately 1.5 points in both the I+ and I- sub-scale between the beginning and end of grade 3; these gains were replicated for both boys and girls and were highly significant (see Table 4). In addition, while the average gain in each subscale was approximately 1.5 points for both sexes, as many as 25% of the sample showed a 3-4 point gain and another 10% a gain greater than 5 points.

CONCLUSIONS

The findings obtained in this investigation did not support the hypothesis that teacher verbal behaviors significantly influenced the development of third-grade children's IE. The failure to find such relationships may have been due to several possible factors. First, the observed gains in IE may have been partially due to maturation, as previous studies (Crandall, et al., 1965; Nowicki and Strickland, 1973;

Penk, 1969) have indicated. Second, the home and socio-economic characteristics of the students in the sample were similar to those described in the literature which lead to the development of internality. Third, variables associated with the school situation (other than teacher verbal behaviors) may also have influenced the results. Fourth, the instrumentation used (FSIA and the IAR) in this study may not have been sensitive enough to those factors which might have facilitated the children's growth in IE. Finally, it is possible that a combination of these factors could explain the findings obtained in this study.

Although the findings remained unexplained, it is significant that an average gain of 1.5 points was found in this study on both the I+ and I- subscales of the IAR. Previous cross-sectional data suggested that there was no gain on the I+ subscale and an average gain of 1.5 points on the I- subscale between grades 3 and 4, but the replication of the 1.5 point average gain on the I+ subscale for both sexes in this study's longitudinal sample supports growth occurring in the I+ construct which parallels that in the I- construct over the grade 3 school year. The discrepancies in the developmental trends found in this study thus suggest the need for future research on the developmental processes underlying growth in IE to be conducted on longitudinal samples.

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Table 1

Means and Standard Deviations for Adjusted I, I+, I- Posttest Scores* for Analyses of Covariance

	Direct (N=12)		Indirect (N=18)	
	Mean	S. D.	Mean	S. D.
Males	adj. I = 25.21	1.58	adj. I = 26.39	1.56
	adj. I+ = 13.18	.88	adj. I+ = 14.08	.90
	adj. I- = 12.19	.93	adj. I- = 12.32	1.52
Females	adj. I = 26.02	2.26	adj. I = 26.10	2.52
	adj. I+ = 12.77	1.09	adj. I+ = 13.72	1.92
	adj. I- = 11.95	.90	adj. I- = 12.39	1.43

*All values rounded to two decimal places.

Table 2

Analyses of Covariance for Adjusted Mean I, I+ and I- Posttest Scores

Source	df	Mean Square	F[a]	p
A. I Scale				
Sex (unadjusted)	1	.00		
Verbal Behavior, adjusted for Sex	1	2.14	.82	n.s.
Sex x Verbal Behavior, adjusted for Sex and Verbal Behavior	2	1.17	.45	n.s.
Error (within)	55	2.61		
B. I+ Subscale				
Sex (unadjusted)	1	.00		
Verbal Behavior, adjusted for Sex	1	1.00	1.28	n.s.
Sex x Verbal Behavior, adjusted for Sex and Verbal Behavior	2	1.36	1.75	n.s.
Error (within)	55	.78		
C. I- Subscale				
Sex (unadjusted)	1	.05		
Verbal Behavior, adjusted for Sex	1	.14	.12	n.s.
Sex x Verbal Behavior, adjusted for Sex and Verbal Behavior	2	.00	.00	n.s.
Error (within)	55			

[a] $F_{.05}$; 1, 55 $\geq$ 4.02

$F_{.05}$; 2, 55 $\geq$ 3.17

Table 3

Multiple Correlation Coefficients Obtained From Regression Equations Predicting Adjusted Mean I, I+, and I- Posttest Scores

Dependent (Criterion) Variable	Multiple R	F[a]
Adjusted mean I posttest scores	.53	1.25
Adjusted mean I+ posttest scores	.50	1.05
Adjusted mean I- posttest scores	.54	1.26

[a] $F_{.05}$; 8, 22 $\geq$ 2.40

Table 4

Differences in I, I+, 1- Scores Between
IAR Pretest and Posttest

IAR Score	N	Pretest		Posttest		Mean Score Difference	t^a	p
		Mean	S.D.	Mean	S.D.			
I	30	23.32	1.25	26.14	1.50	2.82	12.26	$<.001$
I+	30	12.40	.73	13.80	.75	1.40	9.76	$<.001$
I-	30	10.91	.74	12.34	.91	1.43	9.98	$<.001$

[a] $t_{.05;\ 29} \geq 2.045$